TABLE-TOP TRAINING PROGRAM DESIGN

**U.S. Department of Energy
Washington, D.C. 20585**

FOREWORD

The purpose of this document is to establish general training program practices for training personnel in developing training for operation, maintenance, and technical support personnel at Department of Energy (DOE) nuclear facilities.

Table-Top methods can be used for many purposes, but the focus of this document is on training program design. Department of Energy (DOE) Order *426.2, Personnel Selection, Training, Qualification, and Certification Requirements for DOE Nuclear Facilities,* stresses the importance of training programs that are based on a systematic approach. An integral part of any systematically-developed training program includes designing the training program and determining the content of that program. Table-Top Training Program Design (TTTD) is one "systematic" method that can be used by DOE contractor organizations to achieve a cost-effective and high quality training program.

TTTD is not the only method of program design; however, when conducted properly TTTD can be a cost effective, efficient, and self-validating method of defining a training program based on job requirements. The table-top training program design is an acceptable alternative to traditional methods of task analysis and design. DOE O 426.2 endorses and recommends it as a method for designing training programs for positions addressed by the Order.

The DOE Handbook, *Table-Top Training Program Design,* which is the basis of this document, was developed using DACUM (Developing A Curriculum) principles that were refined at Ohio State University. The National Center for Research in Vocational Education was also helpful with information exchange during the development of the original Handbook.

DOE contractors should not feel obligated to adopt all parts of this document. Rather, they can use information from this document in conducting program design as the information and methods apply to their facility. Best practices can be used in whole or in part, as furnished or modified, to meet the specific needs of the facility involved.

Beneficial comments (recommendations, additions, and deletions) and any pertinent data that may be of use in improving this document should be addressed in the Comments Section of this forum.

TABLE OF CONTENTS

These Addenda are in separate files in this Forum

1. SCOPE

1.1 <u>Scope.</u>

This document provides sufficient information to conduct table-top training program design (TTTD). An overview of content analysis and program design is provided and is followed by the table-top training program design method, which is explained in detail. Appendices include facilitator and coordinator guides to provide further information and examples of table-top design.

1.2 <u>TTTD is One Method.</u>

TTTD is not the only method of task/content analysis and design; however, when conducted properly TTTD can be a cost effective, efficient, and self-validating method of determining content and training program design based on defined job requirements.

2. APPLICABLE DOCUMENTS

2.1 <u>Government Documents.</u>

2.1.1 <u>DOE Standards, Handbooks, Technical Standards Lists (TSLs), and Specifications.</u>

The following DOE standards, handbooks, TSLs, and specifications form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the *DOE Standards Index* (DOESI) cited in the contracting document.

- DOE-HDBK-1078-94, Training Program Handbook: A Systematic Approach to Training

- DOE-HDBK-1074-95, Alternative Systematic Approaches to Training

Unless otherwise indicated, copies of DOE standards, handbooks, and TSLs are available from the Office of Scientific and Technical Information (OSTI), P.O. Box 62, Oak Ridge, TN 37831.

2.1.2 <u>Other Government Documents, Drawings, and Publications.</u>

The following additional government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the contracting document.

- DOE Order 422.1, *Conduct of Operations*

- DOE Order *426.2, Personnel Selection, Training, Qualification, and Certification Requirements for DOE Nuclear Facilities*

Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Naval Publications and Forms Center, (Attn: NPODS), 5801 Tabor Avenue, Philadelphia, PA 19120-5099.

2.2 Non-Government Publications.

The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents adopted by DOE are those listed in the *DOE Standards Index* (DOESI) cited in the contracting document. Issues of documents that are not listed in the DOESI are the issues of the non-government standards cited in the contracting document.

- Blank, William E., *Handbook for Developing Competency-based Training Programs,* Englewood Cliffs, N.J., Prentice-Hall, 1982.

- Norton, Robert E., *DACUM Handbook,* The National Center for Research in Vocational Education, Ohio State University, 1985.

Non-government standards and other publications are usually available from the organizations that prepare or distribute the documents. These documents also may be available in or through libraries or other informational services.

3. GENERAL GUIDANCE

    3.1   <u>Intent of Table-Top Training Program Design.</u>

Developing training using a systematic approach involves five phases: analysis, design, development, implementation, and evaluation. In the analysis phase, training needs are determined. When training is selected as part of the solution, the analysis phase creates the data that serves as the foundation for the systematic development or revision of training programs. This data is obtained from three sources: job needs, learner needs, and organizational needs. Effective analysis is a cost benefit by saving more than it costs through ensuring that training resources are spent where they are most needed.

Table-Top Training Program Design will help your facility conduct analysis and the entire design phase of a systematic approach to training for a job position/program. Your facility should have already developed a valid task list and selected which tasks require formal training for the job position. The team will use that list of tasks selected for training as the basis for analyzing and designing the training program content. The process used in TTTD is based on analyzing content while simultaneously designing the training/qualification program. This process has proven to require much less time than traditional task analysis methods -- in fact saving hundreds of hours -- with valid results.

    3.2   <u>Who is Involved.</u>

During the process, a coordinator makes the necessary arrangements and one or two facilitators guide a team of job incumbents, subject matter experts (including an immediate supervisor and a safety analyst), and instructional technologists (who will be responsible for developing the subsequent training program) through the process.

    3.3   <u>Steps in the Process.</u>

During the process, the facilitators guide the team members through the following steps:

Step 1   Orient the team. This involves:

        a. Reviewing the valid task list.

        b. Providing participants with a vision of where the TTTD process is going and the reasonably achievable goals of the process.

        c. Providing the participants with the skills to reach these goals.

Step 2   Design the training program structure including the training flow paths for both the initial and continuing training program, training settings and testing requirements.

Step 3   Place the tasks within the training program structure. Assign each task to a topic or major training block in the training program structure. Thus, common tasks are placed together.

Step 4   Prioritize topics or training blocks for development efforts. Identify which topics already have sufficient training material to teach them and which tasks need to have training material developed.

Step 5   Determine the course content. This sets the training content for each topic prioritized for development.

Step 6   Identify additional content. Examine regulatory requirements to list additional content mandated for inclusion in the training program.

Step 7   Identify applicable existing training. Identify training materials that can be modified or used "as is" which may already exist locally with vendors, universities, or at other facilities that have similar job positions. This avoids unnecessary duplication of development efforts.

Step 8   Write terminal and enabling objectives for each topic.

3.4   Purpose of Table-Top Training Program Design.

Table-top training design has been used to design training programs at various levels including professional, technical, skilled, and semi-skilled. Table-top training program design is based on the following three premises:

    a.   *Expert workers* are better able to describe/define their job than anyone else.

    b.   Any job can be effectively and sufficiently described in terms of the *tasks* that *successful* workers perform in that job.

    c.   All tasks have direct implications for the *knowledge, skills,* and *attitudes* that workers must have in order to perform the tasks correctly.

A carefully chosen group of expert workers (subject matter experts, a supervisor, and a safety analyst) from the job form a TTTD team. A facilitator guides the team through the session to complete the program design (some up-front time is involved in properly

planning the table-top training design). Brainstorming is one technique used to obtain the collective expertise and help the team reach consensus.

Since the team consists of people with expertise in their job, team members do not need advance preparation. Generally, team members find working on the team to be both professionally stimulating and rewarding.

It must be stressed, however, that some job positions may not have any "experts." This is especially true when a new position is created or at facilities that are in the early stages of operation. In these cases, the facility may decide to use a method other than table-top training design.

Accurate work by the TTTD team is important since these tasks will form the basis for developing lesson plans and/or courses for their training program. It is imperative that the team work together to establish an accurate product. If the work is faulty, the instructional products developed will be faulty.

3.5   Advantages of Table-Top Training Program Design.

TTTD, when used properly, can provide an efficient and cost-effective method of content analysis and program design. TTTD is inexpensive in comparison with some other training program design methods since the process is completed in a few days. The end products of TTTD can be favorably compared in validity with any other method.

An additional benefit of the process is the partnership that forms between the training department and the operating organization designing the content since the team is primarily comprised of people from both areas. Additionally this process establishes a sense of ownership of the training program by the line organization

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4. DETAILED GUIDANCE

4.1   Factors that Impact Quality.

TTTD quality is directly linked to two critical factors: (a) assembling a team of two to six subject matter experts, one supervisor, and one safety engineer/specialist, and (b) using a trained TTTD facilitator. A trained TTTD facilitator (one who has been trained in the methods of table-top training program design) is required to maximize effectiveness of the design process. Some general conventions associated with TTTD are:

a.   The coordinator/facilitator is qualified through training and practical experience.
b.   Team members are subject matter experts (SMEs).
c.   Supervisors that are on the team are SMEs as well.
d.   The same team members participate throughout the entire session.

4.2   Team Member Roles.

For TTTD to be successful, the people assembled must operate as a team. Each member must be aware of his/her role and responsibilities while on a TTTD team. Observers are welcome but must not participate as team members.

4.3   Table-Top Training Design Coordinator.

In this document, the term *table-top training design coordinator* is used to refer to the person who plans the design process, and makes the necessary pre-session arrangements (including selection of team members). The coordinator may or may not act as the facilitator of the session.

4.4   Table-Top Training Design Facilitator.

The facilitator has the pivotal role in the TTTD process. The facilitator will be responsible for teaching the lessons during the training portion of the process and for facilitating the design team throughout the workshop portion of this process.

The suggested team membership is SMEs, their immediate supervisor, and instructional technologists, as appropriate. The facilitator's ultimate goal is to guide the team to a consensus decision regarding the design and content of the training program, while the others use their technical expertise to discuss important elements.

The facilitator also has an additional responsibility. Members of the facility training staff may be in attendance during the entire process in order to learn how to conduct TTTD. During the training portion of this process, the training staff will participate and should

sit at the same tables as the team members. During the workshop portion of this process, the training staff will help lead various portions of the steps. The facilitator must be careful to serve as a role model for the training staff and make time available during lunches or evenings to answer any questions they may have. During all of the TTTD steps, the observers who will be developing the subsequent training program for this job must pay close attention to the proceedings and take notes of training-related discussions. These notes will be valuable during the development phase of the training program.

Many people can assume the role of coordinator, but few have all the necessary qualities to perform as the facilitator. With input from management, the coordinator should choose the facilitator. The choice should be carefully made, based on the qualities required of a facilitator.

Special Skills Required of TTTD Facilitators
- Expertise in task and document analysis processes
- Expertise in training program content design process
- Expertise in the table-top design method
- Skill in nominal group techniques
- Skill in questioning techniques
- The ability to act as a process expert who leads and controls the process but allows team members to act as content experts who make content judgments and decisions
- Skill in small-group dynamics
- Skill in obtaining small-group consensus
- The ability to establish and maintain the team's pace, balance, and participation
- The ability to recognize poorly written or vague learning objectives and help the team select the most appropriate action verbs, task statement modifiers, and nouns

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4.5   Facilitator Qualities.

The facilitator's role during TTTD will be to serve as a process expert who facilitates the sessions but does not provide technical input for the training program content. Successful facilitation hinges on three factors: interpersonal skills, expertise in content analysis and design process, and possession of special skills associated with facilitating the design effort of the training program. At a minimum, the facilitator should be extremely familiar with task, document, and design processes. Preferably, the facilitator should be qualified to facilitate TTTD through training and practical experience.

This document can serve as a self-study guide to help the facilitator gain the knowledge needed for the special skills shown below.

4.6   Planning the Session.

Proper planning will help ensure a successful and productive TTTD session. Major areas of concern in pre-session planning include: (a) securing management's approval and support, (b) involving appropriate staff in the planning process, and (c) developing a schedule of major events and activities. Normally, the TTTD coordinator is responsible for initiating the planning process and making the necessary arrangements, however, the coordinator must gain the understanding, support, and commitment to the entire process of the people involved.

4.6.1   Secure Management Approval.

Since the design process being implemented involves facility personnel, it is important to communicate the purpose and secure commitment to the process and its end products of all affected management levels. The facilitator's discussions with management should include:

a. *Purpose of Process*. Explain that during the TTTD process, facility personnel can facilitate the analysis and design processes, while at the same time teaching facility training staff how to conduct the process.

b. *Who Needs to be Involved*. Explain that this process should involve the people described in Step 3 below, who must be allowed to participate for the entire time. Managers should suggest potential team members based on the team member qualifications listed in Step 3. The SMEs, supervisor, and safety analyst must be experts (not just bodies to fill a position on the team) so the process will be successful and ensure an effective training program.

c. *Agenda*. Explain that the introduction and overview of the process will take place on the first morning and should last until lunch. The workshop begins right after lunch. The amount of time spent on the workshop depends on the needs of the facility.

> **Possible People to Contact**
>
> 1. Management for approval of participation as Coordinator
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> 2. Operating organization(s) management can release expert job incumbents and their supervisors for participation in this process
>
> 3. Safety organization to release a safety analyst who understands the safety implications involved
>
> 4. Training organization management responsible for the associated training program

4.6.2   Involving Staff in the Planning Process.

Whenever a coordinator conducts activities that may affect others at a facility as TTTD may, the coordinator should involve those people who are likely to be affected by or concerned with the resulting changes. Involving these people elicits their understanding

and support of the process, which is vital for changes to take place as a result of TTTD. When planning for a TTTD session at a facility, the coordinator should try to involve the following: (a) managers, (b) instructional staff, and (c) support personnel.

Facility managers whose people will be used on the team should be informed of the TTTD process, its benefits, and the reasons for selecting specific people for the team. These managers should also be aware of the coordinator's plans in order to approve the time schedule, budget, personnel involved, and job selected.

Since the results of TTTD are going to be used as the basis for developing or improving instructional products, facility instructional staff should become involved in the process. The instructional staff should send representatives to observe the process and take notes. The discussions that take place among the team members can be beneficial to the instructors.

The instructional staff may also act as coordinators, facilitators, or as sources of information to help identify program areas needing development.

4.6.3 Select Team Members.

The quality of team interactions and thus the end product--the training program content--will depend heavily on the people selected to participate in this process. These people must be included on the team:

a. 2-5 SMEs (those job incumbents in the position who are considered "role models" for safe, competent performance).

b. 1 person who directly supervises the job incumbents in the job.

c. 1 safety analyst who understands the design of facility systems and the impact on safety that these job incumbents have.

d. 1-5 training people who are responsible for developing the subsequent training program.

e. 2 facilitators (one facilitator should act as a recorder when not actively facilitating).

f. 1 coordinator who will arrange the process. In addition, the following people may also be invited to attend as observers:

   1) 1-5 observers from the facility training department who want to learn how to conduct this process for other job positions.

   2) 1-2 procedure writers may benefit by observing to document any changes required in job-related procedures.

NOTE: If your facility has used a Table-Top Job Analysis Process to develop the valid list of tasks selected for training, it would be most effective if you invited the same job incumbents and supervisor to participate in the TTTD process.

4.6.3.1 <u>Team Member Qualifications.</u> Using input from management, select team members based on the qualifications described below.

The SMEs, supervisor, and safety analyst are the team members who will use their technical expertise to determine the content of the training program. The same team members should participate throughout the entire process (up to 5-6 days).

4.6.3.2 <u>SME Qualifications.</u>

Expert job incumbents are in the best position to explain "what they do." Therefore, the SMEs selected as team members should be full-time employees in the job to help ensure their knowledge of and familiarity with all aspects of the job. They must be technically competent and perceived as "role models" for proper job performance. They must be highly skilled and knowledgeable of the tasks required to perform the job, and aware of current developments such as new procedures, new equipment, and facility and industry "lessons learned." In the circumstances where the job requirements are changing, the position is still under development, or no expert worker is yet functioning, system engineers/procedure writers may be used in lieu of SMEs.

SME Qualifications
1. Full-time employee in the job being analyzed
2. Perceived as the "role model" for proper job performance
3. Highly skilled and knowledgeable of the job
4. Aware of new procedures, equipment, and "lessons

4.6.3.3 <u>Supervisor Qualifications.</u> The supervisor should directly supervise those who perform the job. A supervisor with recent practitioner-level experience in the job can provide useful insights and continuity to the process since he or she knows what is considered "desirable" worker performance. The caution is to make sure the supervisor has a good working relationship with the job incumbents so the SMEs on the team will not feel hindered or threatened when describing their jobs. The supervisor selected to participate on the team must be someone who will listen to and consider the contributions of all team members even though the supervisor may disagree on some discussion points. The entire team must be able to come to consensus without the supervisor's opinion bearing more weight than the other team members'.

Supervisor Qualifications
1. Directly supervises the job incumbents who perform the job
2. Recent practitioner-level experience in the job
3. Has good working relationship with job incumbents serving on the team

4.6.3.4 Safety Analyst/Engineer Qualifications. The safety analyst/engineer should be selected based on his or her knowledge of how the facility systems are designed and familiarity with the facility's Safety Analysis Report or equivalent. The safety representative must also be familiar with the tasks involved in the job position being analyzed and have a good working relationship with the job incumbents.

4.6.3.5 Training Personnel Qualifications. The training personnel who will be responsible for developing the training program must also be in attendance throughout the entire process. In fact, they will be responsible for facilitating portions of the 3'/z-day process and for finishing any remaining training design steps. The product of this process will serve as the trainer's input for the development phase of the systematic approach to training.

In addition to the technical competence required of the SMEs, supervisor, safety analyst, and the training staff, all team members must possess interpersonal skills:

Training Personnel Qualifications

1. Responsible for developing the training program (lesson plans, OJT guides, exams, etc.)
2. Capable of facilitating the content analysis/design process with the team until the process is complete (may take up to 1-3 days after the 3'/z-day process)
3. Aware of the status of any existing training taking place and of the settings available at the facility
4. Capable of facilitating without directing team members in content decisions

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Interpersonal Skills Required by All Team Members

- The ability and willingness to clearly describe the knowledge and skills required to perform their jobs (N/A for trainers)
- The skill of listening respectfully to the views of others and participating effectively in group discussions without dominating or being dominated
- A disposition not prone to overreacting to criticism or to having their contributions analyzed or reorganized
- A disposition of a team player who believes in the process and wants to participate in the process (this excludes people who are "sent" without explanation or are simply assigned by their supervisor to "fill a seat" on the team)
- The ability to be open-minded and free from biases related to training methods, training time, and trainee qualifications

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4.6.4 Establish Dates for Process and Follow-on Activities.

When selecting the date for the TTTD process, keep in mind that it may take 60-90 days to finish all coordinator responsibilities. When seeking management's approval, ask if they have suggestions for dates that would best accommodate potential team members (shift schedules, scheduled outages, etc.).

4.6.5　Select the Facilitator.

Regardless of where the facilitator is from, the facilitator's role is that of a process expert who facilitates the process but does not provide technical input for training content. The facilitator must be open to trying a new concept of analysis (the one built into this process) and have technical expertise in all phases of the systematic approach to training. Facilitators should also have some knowledge of the job or they could be led down the wrong path unknowingly.

When selecting the facilitator(s), carefully compare the candidate with the checklist of interpersonal and facilitation skills on the next page. Instructional Technologists in the training departments usually have the necessary experience and skills to facilitate this training design process.

Interpersonal Skills Needed by Facilitator

- A sensitivity for others
- Excellent memory
- Patience
- The ability to display and maintain a positive image
- A high degree of sensitivity to both verbal and nonverbal communication
- The ability to establish and maintain enthusiasm

- The ability to show empathy
- A sense of humor
- The ability to make decisions
- Excellent listening skills

- The ability to display warmth and establish rapport quickly with team members
- The ability to motivate encourage and focus team members

Facilitation Skills Required of Facilitator

- Expertise in the systematic approach to training
- Experience using the training design process built into this process - Skill in questioning techniques
- The ability to act as a process expert who leads and controls the process but allows team members to act as content experts who make content judgments and decisions
- Skill in small-group dynamics
- Skill using nominal group technique
- Skill in obtaining small-group consensus
- The ability to establish and maintain the team's pace, balance, and participation

Interpersonal Skills Needed by Facilitator

4.6.6   Gather Information for Review by the Facilitator.

Job information should be gathered and sent to the facilitator at least 20-30 days prior to the process. The facilitator will use this information to prepare real-life examples for use during the process and to understand the content of the training program. Having this information will greatly improve the facilitator's ability to help the team progress through each step.

Send to the Facilitator:

- The title of the job position/program being designed
- A brief job description (job posting)
- A list of the **existing** entry-level requirements for the job including *all* selection requirements (i.e., education, experience, and medical), *all* entry-level knowledge and skills, and *all* entry-level training (i.e., facility- and site-specific training, training driven by requirements, etc.)
- The valid list of tasks selected for training
- The procedures that describe the tasks involved in the job
- A description of what training and evaluations are already in place (e.g., 80-hour fundamentals class, followed by OJT, followed by job performance measures, etc.)

4.6.7   Roles of the Participants.

The "team" consists of the SMEs, supervisor, safety analyst, and training personnel responsible for developing the training materials. The role of the SMEs, supervisor, and safety analyst is to use their technical expertise to identify what knowledge and skills should be taught in the training program. The role of the trainers during the process is to help facilitate the process, provide training strategy suggestions, and document the results. After the process, the trainers will be responsible for completing any training design steps that may not be finished during the session, and will use the results to develop training materials. This completes the "design" phase of a systematic approach to training, and the trainers will be responsible for beginning the "development" phase.

The "observers" may consist of other training staff and procedure writers. The role of these trainers will be primarily to observe, but they will have an opportunity to help facilitate portions of the process. The role of the procedure writers is to observe and take notes of any changes required to job-related procedures. The observers may NOT contribute technical input during this process or attempt to sway the decisions of the team members.

4.6.8   Developing a Schedule of Events and Activities.

A number of specific activities must be planned and carried out in advance of the session by the staff and coordinator. A schedule of activities from ninety days prior to the session and a daily session schedule are included in Addendum A, *Checklist of Coordinator Steps to Prepare for Table-Top Training Design Process*.

4.6.9   Informing Team Members.

At this point, the coordinator should have defined the job, identified potential sources of team members, and determined the criteria to be used in the selection of members. Two other major tasks must be carried out before the TTTD session: (a) contacting the organizations that have the type of expert workers needed, and (b) contacting the prospective team members.

A coordinator may be hesitant about contacting organizational management to ask if they are willing to participate in the TTTD session by releasing one or more of their best workers for two to three days. However, management will gladly participate in the process when they know that the effort will be worthwhile.

An important aspect of contacting the organizational management required for the TTTD session is to stress how the organization's expertise is needed to update or establish a training program. The coordinator should assure the organizational management that the process will not be successful without the help of the organization's experts.

When possible, it is important for coordinators to make an appointment to visit the necessary managers to explain the TTTD process and to request their cooperation in nominating and releasing one or more workers. During the visit with the organization, the coordinator should be prepared to explain the TTTD process, how the results will be used, and the qualifications of the worker or supervisor needed. A one- or two-page written explanation and sample TTTD products to leave with the organizational management can be very helpful.

The best way to obtain team members for a TTTD team is to meet personally with each nominee, as arranged through the organizational management, thirty to sixty days in advance of the session. If there is sufficient time, this one-on-one technique elicits the best results.

Prospective team members may hesitate to make commitments to a new or different experience. The TTTD coordinator should explain the member's role in the process. Prospective members should be told what to expect from the TTTD session and that support from management for their involvement has been secured.

During the explanation, the coordinator should stress the importance of the full-time commitment to the session. Each team member should be present and participate in all portions of the session. Coordinators should not ask someone to be a team member if they are obviously not interested in the activity. Such a person probably will not be a major contributor to the process and may even be detrimental to its success. If proper selection procedures are followed, few workers will object to participating. Most people will gladly contribute their expertise the TTTD process.

To complete the selection process, it is highly recommended that the coordinator make confirming phone calls to each member five to ten days prior to the session. This provides them with an opportunity to ask any questions and to confirm their plans to attend the session. If several people must cancel at this time, there is still time to seek qualified alternates.

4.7   Facilitator Preparation for TTTD.

4.7.1   Study and Use the Lesson Plans.
Addenda C, D, E, and F are lessons that may be used during the TTTD process. Addenda C-E may be used to "Orient the Team to TTTD" (TTTD Step 1). The Participant Manual (Addendum G) should be provided to process participants during the introduction lesson (Addendum C) and used in conjunction with Addenda D, E, and F. Addendum F may be taught just prior to Step 8 "Write the Learning Objectives" and equips them to perform Step 8.

Using the "Maximizing" lesson plan (Addendum E) will depend on the team members' familiarity with nominal group technique and consensus decision-making skills. See "Study Nominal Group Technique and Consensus Decision-Making Processes" in this segment to determine whether to use this Addendum.

Adequate time must be spent preparing to teach these lessons. They have been carefully designed to help members succeed during the workshop.

> **The coordinator should send:**
>
> The TTTD Planning Sheet
> - Who initiated the request for this process
> - For which job position/program the training program content is being designed
> - The dates of the process
> - The meeting room where the process will be held
> - The names of the SMEs, supervisor, and observers
>
> A Validated Task List for the Job
>
> Job Information (if available)
> - A brief job description (job posting)
> - Copies of procedures that reflect the tasks involved in the job
> - Systems descriptions if procedures are not available
> - A task list for a similar job position at another facility

4.7.2   Review available information.
Twenty to thirty days prior to the process, the coordinator should send planning information, job information, and the validated task list. The job information should be used for familiarization with the job. The duty areas and task statements should be used to gain an idea of what kind of structure the training program might take. During TTTD

Step 2, the coordinator will have all available job information in the meeting room (standard operating procedures, system descriptions, process and instrument diagrams, and other materials relevant to the job position) to allow team members to reference them when identifying the different subject areas that will be part of the training program structure. Also, team members will look at several types of program structures. It would be valuable if the facilitator could bring example structure(s) from similar job positions so they might have a working guide as they design their program's structure.

4.7.3 Study Nominal Group Technique and Consensus Decision Making Processes.

The team will use various techniques to design the training program content. They will have access to available job information and procedures to assist them in designing the curriculum, but discussion and consensus decision-making will also be required to help the team think of additional information and reach important group decisions about the content and structure of the program. Facilitators of the TTTD process use nominal group technique (NGT) and consensus decision-making (CDM) techniques to facilitate these ends. The NGT and CDM processes are described at length in Addendum E, "Maximizing Team Effectiveness" lesson plan.

What the "Maximizing" lesson does *not* describe is the facilitator's role during these processes. Verbal and non-verbal communication skills must be used to effectively implement the NGT and CDM techniques.

During the Nominal Group Technique and Consensus Decision-Making Processes, thefacilitator is to:

- Encourage each team member to contribute
- Listen actively to all contributions
- Control participants who try to dominate
- Verbalize contributions to ensure accuracy and clarity
- Provide frequent positive reinforcement
- Repress own biases and opinions
- Probe and encourage with facilitative questions
- Set and maintain an enthusiastic climate

4.7.4 Confirm Details with the Coordinator.

Prior to a TTTD session the facilitator should make sure that all needed documents related to the job position will be available in the meeting room:

a. DOE Order 426.2

b. DOE Order 422.1

c. The facility's Training Implementation Matrix (TIM)

     d. Qualification Cards

     e. Other regulatory requirements

     f. The valid task list for the job position

A supply table should be provided at the front of the workshop room. The supply table should be organized to allow sufficient writing space and easy access to the materials. Make sure the space in front of the walls is clear.

4.8 Conducting the Session.

After preparations have been made, the next task is to conduct the session. There are eight major steps involved in conducting a successful TTTD session. The steps are listed below.

     a. Orient the team (if necessary).

     b. Design the training program structure.

     c. Place the tasks within the training program structure.

     d. Prioritize the topics.

     e. Determine the course content.

     f. Identify any additional content.

     g. Identify applicable existing training.

     h. Write terminal and enabling objectives.

> **Organize the following supplies on your table**:
> - 50 shts 8-1/2"x11" yellow paper
> - 1000 shts 8-1/2"x11" white paper
> - 2 black, wide-tipped, permanent markers that do not bleed through paper
> - 1 pkg non-marking putty
> - 1 box push pins or thumbtacks
> - 1 roll of Post-it tape
> - 2 pencils (with erasers)
> - 2 ink pens

While this segment provides a "step-by-step" process for completing the design process, understand that the "steps" are meant to provide more of a "suggested" model to follow rather than a rigid step-by-step process. While it is true that some steps must take place before others (for instance, Step 1 "Orient the Team", must be done first), many steps can be completed out of order, or even while another step is taking place. For instance, "Identify Possible Existing Training" can be performed at almost any time during the process after the team has been oriented. To complete "Design the Training Program Structure," later work in "Place the Tasks on the Training Program Structure" may be considered. Thus, these steps may be completed concurrently. Therefore, the process outlined is meant to provide a loose model of how the process should proceed and not a rigid outline. Because the needs of workers and a facility affect the design of a training program, each process may demand a different approach

while still completing each step. This complexity requires flexibility on the part of the facilitator not only to recognize the varying needs that may develop during the design process, but also to adjust process proceedings to meet those needs and to accomplish the overall goal of the TTTD process.

4.8.1   Step 1 - Orient the Team.

The first step in any TTTD session is to orient the team carefully to what will be happening during the session. The orientation must be well done and should use an informal, non-technical explanation of the process. Addenda C-E were carefully designed to fulfill the requirements of a "well-done" orientation.

Remember that during the lessons, the observers are allowed to participate and sit at the tables with the team members. Once these lessons are completed, the observers should be reminded (during the break after the "Maximizing" lesson) to sit at separate tables in the back of the room with copies of all process materials. Future developers should be reminded to take notes on discussions that will have an impact on the development of the training program.

4.8.2   Step 2 - Design the Training Program Structure.

4.8.2.1   Set-Up for Step 2. Prior to the start of the process, all entry-level requirements (including selection requirements, entry-level knowledge and skills, and entry-level training) should be written on flipchart pages and posted on the far left-hand side of the wall.

A whiteboard (or flipchart if whiteboard is unavailable) should be placed on the other side of the room. The whiteboard must be large enough for the initial and continuing training structures to be drawn. The initial and continuing training structures should be displayed during the entire process to provide a global picture of how the structure is developing.

S-1 Selection Requirements	S-2 Entry-Level Knowledge & Skills	S-3 Entry-Level Training
• B.S. in Technical Field • 2 yrs Experience • Pass Physical Exam	• 10th Grade Reading Level • Basic Math Skills	• General Employee Training • Rad Worker • Facility Specific Training • Conduct of Ops

Hang signs Workshop S-1 through S-3 above the Entry-Level Requirements flipcharts on one side of the room and the whiteboard on the other side of the room.

S-1	S-2	S-3	Initial Training Structure	Continuing Training Structure

4.8.2.2 <u>Conducting Step 2.</u> The workshop portion of the TTTD process will start by stating that the team will focus on designing the training program structure. The participants should be reminded that the goal is to design an efficient, effective training program that addresses the needs of the job incumbents and their supervisors.

a. <u>Design the Structure of Initial Training.</u> The participants should be reminded that as they learned during the "Overview" lesson, the next step involves identifying the topic areas and the flow-chart through which incumbents will progress during initial training.

The front of the room should be set up as in the illustration below.

Allow space around S-4, 5, 6 to add additional charts.

1. <u>Fundamentals.</u> Using nominal group technique and consensus decision-making, have participants list any "fundamentals" courses existing or needed. Write each fundamentals course on separate 81/2X11 pages and place them in horizontal rows on the wall (see illustration below).

2. <u>Other Job-Specific Training.</u> Direct the participants to identify the remaining job-specific training courses. Write them on separate 81/2X11 pages and place them in horizontal rows beneath the fundamentals topics you just completed. Ask the team if the category such as "core" or "job-specific" or other? If the answer is "yes," create a sign and write the category name on the sign. Place the courses that fall under that category to the right of the sign (see illustration).
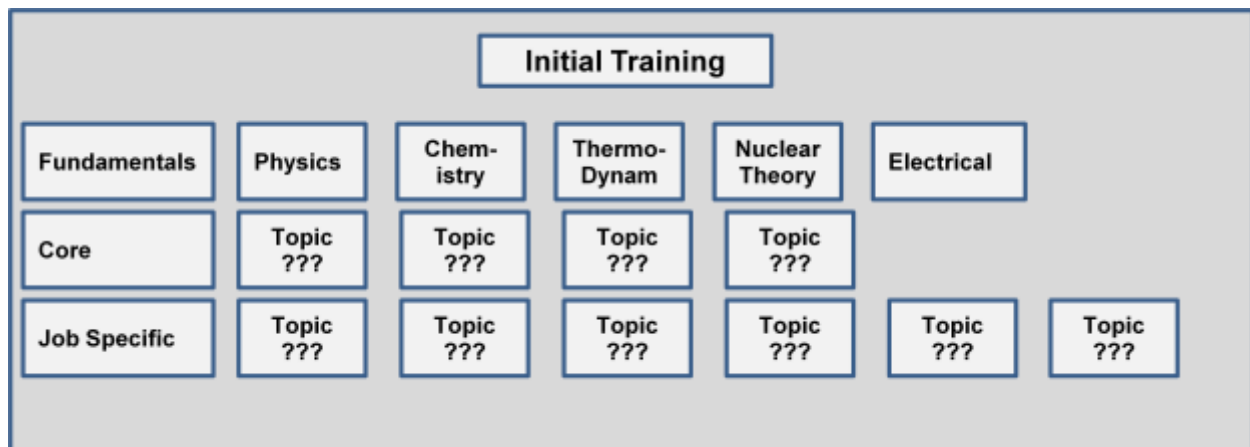
After all the courses have been identified, facilitate a discussion concerning the order in which the job incumbents will proceed through the initial training program. Some questions that could be asked might include: "Which course or courses should job incumbents take first?" "What course or courses should they take after that?" etc. Use

the whiteboard (or flipchart) as a "working board." As the team directs, construct a flow-chart on the whiteboard showing the path in which a job incumbent would proceed during the initial training program. Be sure to include the topic of the training session, the setting in which the training will take place, and any type of testing (e.g., written, performance, etc.) associated with the training.

        b.   <u>Design the Structure of Continuing Training.</u> Remind participants from the "Overview" lesson that the continuing training program encompasses a variety of training, all conducted at different intervals. DOE 5480.20A requires applicable job incumbents to have completed all continuing training within 2-year intervals. This training can take the form of drills, abnormal and emergency procedures training, regulatory training, and requalification training.

Another category of training that will be placed under continuing training is pre-training (as-needed training). Remind the team that pre-train topics include training that occurs so infrequently (i.e., "onetime ever" performance, or several years between performance) that it is more beneficial to do the training "immediately before" the event.

1. <u>Annual Training.</u> Have the participants identify whether any <u>drills</u> are needed. And if so, how often? Refer to the task list and locate any "vital" tasks. If the facility has not yet identified vital tasks, ask the team to examine each task statement on the complete task list and answer the following question: Could improper task performance cause a violation of a Technical Safety Requirement, breach containment, impact the operation of protective systems, cause an unplanned or uncontrolled nuclear criticality, or result in a release of hazardous substance to the environment? If so, mark the task as "vital" on the task listing. Write a "V" on the task statement page of each vital task. If applicable, write each drill and its frequency on a separate 81/2X11 page and place it under the continuing training sign.

   Have the participants identify any regulatory training required more often than every 2 years. Direct them to refer to qualification cards or other documents (e.g., DOE Orders, OSHA) that might list these requirements in concise form.

   Write each regulatory training session on a separate 81/2x11 pages and place them under the continuing training poster.

2. <u>Biennial Training.</u> Have participants identify the structure of requalification training by looking at the overtrain tasks on the task list, DOE 5480.20A, and/or the facility's TIM. Also discuss and/or look at other regulatory requirements that impact the training for this job position.
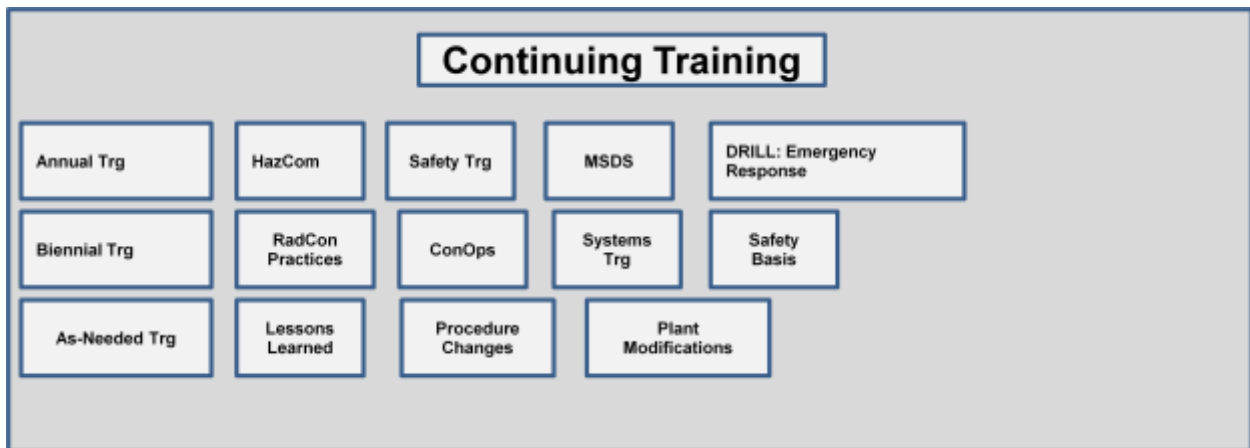
Write each regulatory training session on a separate 81/2X11 page and place them under the continuing training sign.

3. As-Needed Training. Have the team identify any pre-train topics that should be included in the training program structure. As-needed training also includes training on new equipment and changes to procedures of which participants may be aware.

    Write each pre-train topic on a separate 81/2X11 page and place them under the continuing training poster.

    Once all of the continuing training courses have been identified and placed on the wall, it should look similar to the example on the next page.

    After all the courses have been identified, facilitate a discussion similar to the one for the initial training flow-path. The discussion should center around determining the flow-path through which the job incumbents will proceed during the continuing training program, training settings, requalification tests, etc.

Continuing Training

Annual Trg	HazCom	Safety Trg	MSDS	DRILL: Emergency Response
Biennial Trg	RadCon Practices	ConOps	Systems Trg	Safety Basis
As-Needed Trg	Lessons Learned	Procedure Changes	Plant Modifications	

At this point, Step 2 is complete. Keep in mind, however, that the structure will be reviewed several times throughout the process before arriving at the final form.

4.8.3 Step 3 - Place the Tasks in the Training Program Structure.

4.8.3.1 Set-Up for Step 3. Leave all of the signs and pages from Step 2 intact on the wall. Re-draw the initial training structure on the whiteboard onto a flipchart page (and the continuing training structure on a separate flipchart page) and erase the whiteboard. Hang both flipchart pages on the wall (or on flipchart stands if there is no room on the wall) where they can easily be seen. Arrange the topic pages beneath the initial and continuing training signs to allow room to place task statements beneath them (See illustration next page).

4.8.3.2   Conducting Step 3. One of the purposes of Step 3 is to collect enough data to establish a foundation that will resemble a task-to-training matrix.

Take the valid task list and have the team place each task statement on the training program structure. The task or group of tasks will be assigned to one of the topic areas by placing it beneath the topic area or attaching it to the topic area with tape. Remind the team from the overview that the tasks could be assigned to a topic area under any one of the three areas of entry-level requirements, initial training, and continuing training. Remember that overtrain designated tasks could go in all of these areas.
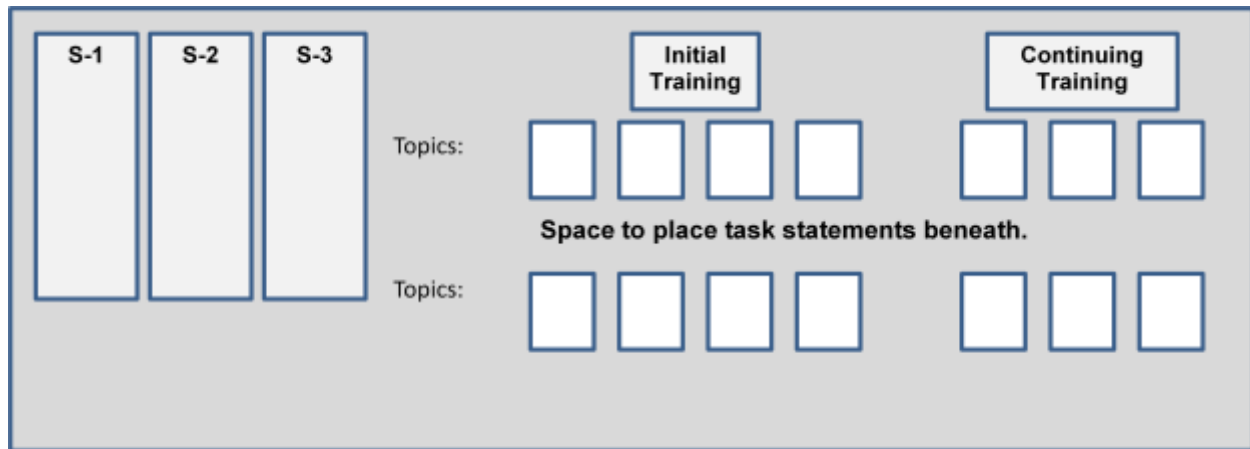
Take one of the 81/2X11 task statements in hand and show it to the class. Then ask "Where does it make the most sense to teach this task?" Another question might be, "Under which topic will the information associated with completing this task be taught?" Ask the SMEs to direct its placement. Sometimes an entire duty area with all of its tasks will be placed under a particular topic. At other times the tasks under one duty area will be split up and placed under different topics. If tasks fit equally well under several headings, accommodate this by duplicating the task on other 81/2X11 pages and placing them in the appropriate locations. Proceed in this manner until all tasks have been placed under topic areas in one of the three areas.

Please note that many of the tasks may already exist in the original program structure under one of the three areas. Although the task's location in the original structure may be the best place for it, do not assume this. In other words, the team should be discouraged from placing tasks in certain places in the structure just because "that is where they have always been taught." Of course, if where the task is being taught in the original structure *is* the best location, then placing it there is beneficial. The point is that the only criterion which determines where a task is placed is where it makes the *most* sense to teach the task.

Once all the tasks have been placed, look for large groupings of tasks. Draw attention to these groupings and ask if the larger groups could be sub-divided into smaller groups to make the structure less jumbled and more organized.

Next, ask if topics should be added, deleted or combined based on task sorting. Ask if the order should be changed. Write any new topics down on 81/2X11 pages and place them on the program structure.

Finally, direct the attention of the team once again to the flow-charts for initial and continuing training structures. Lead a discussion of whether the training flow-path should be changed based on the decisions made during Step 3. As the team directs, reconstruct the flow-chart on the flipchart showing the revised path in which a job incumbent would proceed during the initial training and/or continuing training program. Be sure to include the topics of training sessions, the settings in which they take place (if possible), and any associated requalification testing.

REMEMBER: The facilitator's role is to stimulate the team to make any adjustments that may be needed. Question and challenge their statements when it seems necessary, but always allow the team to make any technical decisions.

4.8.4   Step 4 - Prioritize Courses for Development Efforts.

4.8.4.1Set-Up for Step 4. Once again, leave all of the signs and pages from Step 3 intact on the wall. Re-draw the initial training structure on a flipchart page (and the continuing training structure on a separate flipchart page) to reflect the changes and additions generated during Step 3. Hang the revised training structures back up on the wall before beginning the next step.

4.8.4.2Conducting Step 4. Begin Step 4 by reminding trainees from the "Overview" lesson that this step involves identifying which topics have the most immediate need for the development of training materials.

If there is already an existing training program for the job for which the team is designing a training program structure, then some of the topics of the validated task list might already have adequate training. Other topics which need to have training developed will be identified during this step. Management will want to play a large part in this decision. Make sure that any management personnel are present during this step to provide their input.

Using consensus decision-making, ask the participants, "Which five topics do you feel are most necessary to have training developed?" Place 11/2X2 Post-its on each topic page identified. Then have the participants rank those five topics in order of priority by asking, "Which topic needs training developed for it the most?" Write a large number "1"

on the 11/2X2 Post-it you attached to the topic page. Ask, "Which topic would you say should be next in priority?" Write a large number "2" on the 11/2X2 Post-it you attached to it.

Continue prioritizing topics 3 through 5 until a level of priority has been assigned to all five topics (see illustration on the next page).

4.8.5   Step 5 - Determine Course Content.

4.8.5.1   Set-Up for Step 5. Isolate the prioritized topics and their task statements on a separate wall. Set up a flipchart with a pad of paper at the front of the room where all participants can see it.

NOTE: All signs and pages from previous steps should be left up in order to retain a global picture of the program.
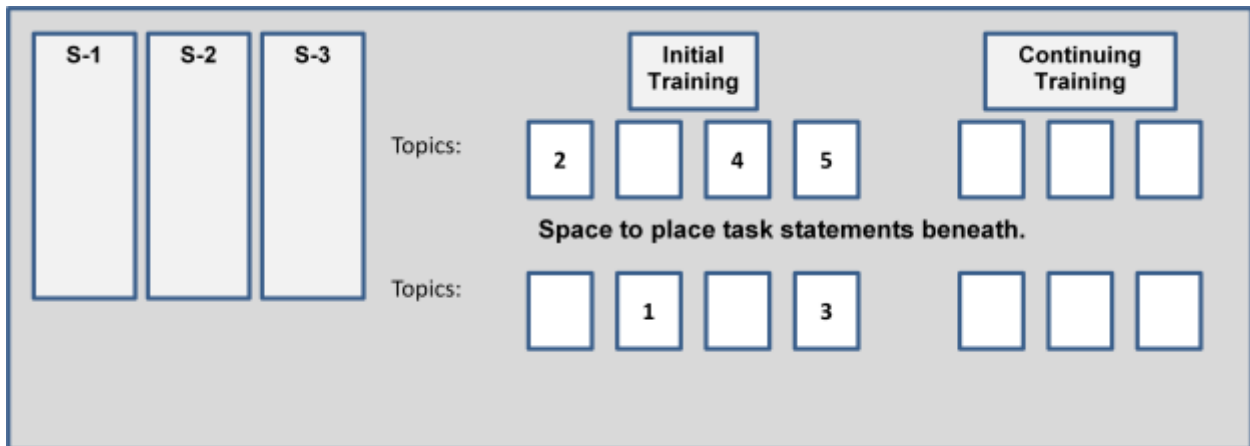
A couple of markers should be on hand. If the topics for which you will be analyzing content have procedures written for them, be sure each participant has a copy of the procedure.

4.8.5.2   Conducting Step 5. Remind participants from the "Overview" lesson that determining the course content involves determining what should be taught to trainees during a lesson so they can adequately perform the task. Before determining content, agree on the most appropriate level at which to write it. Share some examples with the team illustrating different levels at which content can be written. Have them decide on the most appropriate level.

Next, direct the team's focus to the highest prioritized topic area. Write the content on a flipchart page or pages and place it under its topic area and task statements (see illustration below).
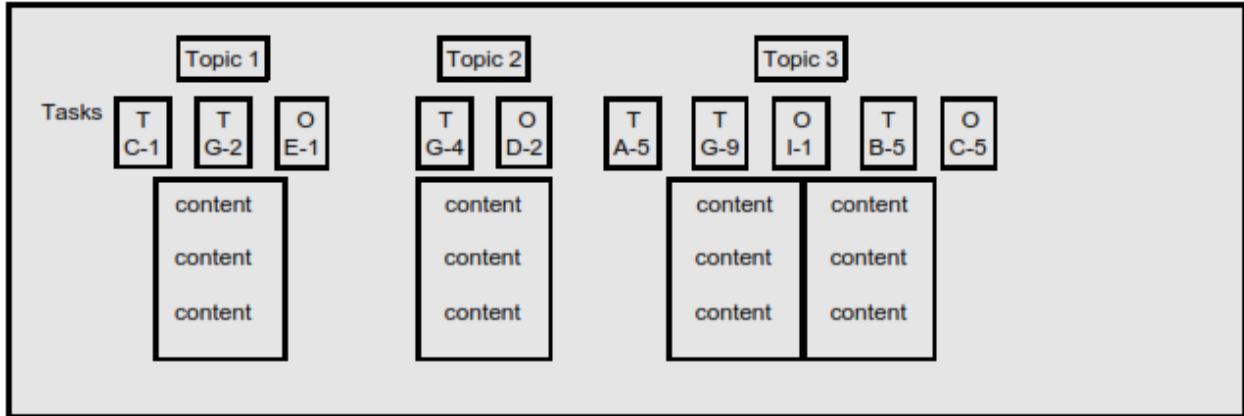
NOTE: The co-facilitator should begin filling out Addenda H & I. See Addenda H & I for directions.

4.8.5.3 <u>Methods for Determining Content.</u> There are several methods for determining the content of a topic area. Methods include document analysis, brainstorming, and traditional task analysis. Usually, combinations of these methods will be necessary depending upon the situation. Determine the most appropriate method based on the criteria listed under each method below. Understand that the following list of methods is not exhaustive. If there is another method that would be beneficial to the situation, employ it. The goal is to use methods that will most efficiently and effectively accomplish the goal of analyzing the content of the chosen topic.

a. <u>Document Analysis.</u> Document analysis is one method that can be used to determine the content of a training program, course, or lesson using information obtained directly from operating documents. The goal of this method is to extract knowledge and skill requirements directly from process documents. Once the content is determined, learning objectives can be written. The analysis process is explained below along with several guidelines and techniques a facilitator should keep in mind.

For a task-based training system, a key document for analysis is the operating procedure. An operating procedure is a document that lists the steps for accomplishing work. The discussion below assumes the use of an operating procedure. Similar guidelines and techniques could apply to the analysis of other types of documents.

Before starting the process, ensure that each team member has a copy of the procedure for which the training content will be determined.

1. <u>Verify the Usability of the Procedure.</u> Determine the usability of the procedure by asking the team questions such as:

- Does this procedure reflect how the job is currently being performed?

If the answer is "yes," the procedure can be used to determine training content. Write the title of the procedure at the top of the flipchart. If the answer is "no," the procedure will not be useful and document analysis should not be used.
If they answer that the procedure is partially correct, document analysis can be used; however, the facilitator will need to guide the team in identifying steps in the procedure that do not apply, and should guide the team in determining what new content should be added or changed that would reflect the correct performance of the task. While performing document analysis, ask questions such as:

- What content would you include that would address recent changes that have occurred in the task?

DO NOT allow the session to turn into a critique on how the procedure should be changed. Keep the focus on determining what content needs to be taught in order to adequately perform the task.

2. <u>Explain the Desired End Product.</u> Explain to the team that since procedures are used by the workers as job aids when they perform the task, the only training content that needs to be identified is that which is not readily obvious from reading the procedure. Explain that as the team searches the procedure, they can determine content by asking themselves one of the following questions:

- If I were going to teach this task to someone, what do they need to know in addition to what is stated in order to perform each step? or...

- What would a developer need to include in the training material on this task to ensure that a trainee will be trained to perform the task safely and according to established standards?

3. <u>Determine the Prerequisites.</u> Ask the team what courses should be completed before receiving training on the task. Usually, prerequisites will consist of fundamentals courses, but should not be limited to fundamentals alone.

4. <u>Determine Content from Procedure Front Matter.</u> Most all procedures have introductory material preceding the actual steps of the procedure. Have the team determine if any content can be found in this material. Write the title of the procedure at the top of a flipchart page. Then ask the team:

- Consider the front matter of the procedure. Is there any content that we would need to teach in order for a worker to understand the front matter?

Employ nominal group technique (NGT) or brainstorming to list the content. Choose the technique that will be most effective. Be willing to change your technique if you sense it is not working. If using NGT, have each individual write their ideas on paper. When it appears they have exhausted their ideas, go around the room in round-robin style having each person share an idea until all ideas are exhausted. As they share, record their ideas on the flipchart. If using brainstorming, have the members share their ideas and write them on the flipchart.

NGT or brainstorming can be used as a team, or the team may be split up into smaller groups and have each group take a different procedure. Then get back together as one team to review and discuss each group's results and come to consensus. Both methods may be used in order to incorporate variety in the process so that the activity does not get tedious for the team members.

5. <u>Determine Content from the Steps.</u> Direct team members to look at the first step to determine what content should be taught about the particular step in order for a worker to complete it. Some possible questions to stimulate their thoughts are:

- What would a person need to know to complete this step that the procedure does not explain?

- Is there anything that could go wrong when performing this step that the procedure itself does not identify and should be taught?

- Is there any information missing from the step in which the worker should be trained that would fall in one of the following areas:
  - Administrative knowledge
  - Theory requirements

- Interactions with other equipment or systems
  Interactions with other personnel
- Etc.

Use NGT and/or brainstorming to identify the content. Repeat the process with each step until complete.

6. <u>Evaluate the Final List.</u> Once the content is identified, there are several questions the facilitator should ask to guide the team in evaluating the content. The facilitator should have the team evaluate whether all possible content has been identified that will train the worker on the task. To determine this, the facilitator should ask a question similar to the following:

- Looking at this list of content, is there anything else you can think of that you want to include as content for this step?

Also, the facilitator should ensure that the content that has been identified is not already taught somewhere else. To avoid redundancy in the program, the facilitator should ask the following question:

- Is any of this content taught elsewhere in your training structure before we include it as content for this lesson?

Content may even be identified which should have its own course or be taught under a different topic which contains similar content. Questions similar to the following can establish this:

- This seems like it would probably be a big topic. Should we create a new course to teach this content and make it a prerequisite to the content we are presently working on? or...

- This content seems similar to that taught under this course over here. Should we teach this content under that topic instead? or

- This appears to be a recurring content area for many of the tasks. Should we teach this content under one topic instead of teaching it over and over in each lesson?

A thorough understanding of the preceding process is needed in order to guide the team in an effective manner. Keep in mind the guidelines outlined below.

7. <u>Guidelines.</u> Several factors influence the validity of the content that is determined for a task using the procedural analysis process. These are

(1) the quality of the procedure, (2) the expertise of the SMEs, and (3) the skill of the facilitator. When conducting procedural analysis, course content has the highest probability of being valid when you have a high quality procedure, a very knowledgeable and experienced team of SMEs, and a facilitator who has the skills (questioning skills, etc.) that draw out all content possibilities.

The Quality of the Procedure. A high quality procedure is one that is up-to-date and reflects how the task is currently being performed by the workers. The more a procedure explains exactly how a task is done, the less training will need to take place to learn the task.

The Expertise of the SMEs. A team of SMEs that is very experienced in the position being analyzed will tend to yield the most valid content information. The less experienced the SMEs are, the more the facilitator will need to be skilled in questioning and probing in order for the appropriate information to be drawn out of the SMEs. While it is best to have a team of SMEs with several years of experience, this type of group can present problems. SMEs with several years experience can tend to view the tasks they perform in "simplified" ways since they have been performing them for years. The facilitator can compensate for this tendency by reminding the SMEs to assume the perspective of a new-hire--keeping in mind that what is "simple" to the SMEs because of many hours of repeating the procedure will most likely seem very difficult to a new-hire who has never performed the specific task. For this reason, a question like the following can be helpful:

- Look at the procedure from the perspective of a new-hire. Have you included all the content you believe they would need to be taught in order to adequately perform the task? What else would you include?

The Skills of the Facilitator. The skills of the facilitator will also affect the validity of the final content. A good facilitator will keep in mind the above factors about the quality of the procedure and the expertise of the SMEs. A good facilitator also knows the end product he or she wants the group to achieve, can communicate that end product to the team in a way that is understandable, and can draw out appropriate information (using questioning skills, etc.) in order to lead the team in obtaining that end product. A good facilitator observes the group dynamics taking place and varies the analysis methods and

approaches as needed. For instance: Are all members participating? Are a select few dominating the discussion? Is constructive dialogue taking place that leads to valid content? Is information being thrown out haphazardly and assumed to be correct? Is group consensus taking place? Is there dissension regarding final decisions? The facilitator must help the group to understand and achieve the group dynamics that will assure the quality of the end product.

b. <u>Brainstorming.</u> Simple brainstorming (or brainstorming using NGT) is another method to determine the content of a training program, course, or lesson. Brainstorming should be used when the SMEs are very familiar with the task, the procedure is inadequate, or there is not a procedure written.

Most of the questions, processes, and guidelines that applied to document analysis apply to brainstorming as well. However, when brainstorming, procedures will not provide a great amount of the content (as in document analysis), so much more detailed content information should be obtained from the SMEs about the task or task-group. Simply take the task or task groupings one at a time in the order that they have been prioritized. Place them before the SMEs and ask them many of the same questions that were asked for document analysis such as:

- If I were going to teach this task to someone, what do they need to know in order to perform this task?

- What would a developer need to include in the training material on this task to ensure that a trainee will be trained to perform the task safely and according to established standards?

- What do you wish you had been taught about the task when you were first trained?

- Should the worker be trained in any of the following areas:
  - Administrative knowledge
  - Theory requirements
  - Interactions with other equipment or systems
    Interactions with other personnel
  - Safety considerations
  - Etc.

Write the content on a flipchart. When the SMEs feel they have exhausted all content possibilities, tape the task statement or statements to the content page for the developer's later use. Proceed with each prioritized task until content has been

determined for all tasks. Encourage the SMEs to continue to think about possible content areas for tasks even though they may feel they have exhausted all content possibilities. Additional content can be added throughout the process.

c. <u>Traditional Analysis.</u> Occasionally, traditional analysis methods for determining content must be employed. Traditional analysis methods should be used when the SMEs are very *un*familiar with the task, and do not have a good procedure written for it.

Again, most of the questions, processes, and guidelines that applied to document analysis and brainstorming apply to traditional analysis as well. However, when using traditional analysis, you will want to break the task down into its elements, and the elements into the knowledge, skills, and abilities (KSAs) needed to perform the elements. As with the other methods, simply take the task or task groupings one at a time in the order in which they have been prioritized. Place them before the SMEs and ask them many of the same questions that were asked for document analysis such as:

- What do you do first? second? etc.

- For what tools\equipment does an incumbent need training?

- What knowledge does an incumbent need to perform this task?

- What skills does a job incumbent need to have in order to perform this task?

- Is there any knowledge or skill that should be included from one of the following areas:
  - Administrative
  - Theory requirements
  - Interactions with other equipment or systems
    Interactions with other personnel
  - Safety considerations
  - Etc.

Write the elements, knowledge, and skills on a flipchart. When the SMEs feel they have exhausted all element, knowledge, and skill possibilities, tape the task statement or statements to the content page for the developer's later use. Proceed with each prioritized task until knowledge and skills have been determined for all tasks. Encourage the SMEs to continue to think about possible knowledge and skills for the tasks even though they may feel they have exhausted all possibilities. Additional knowledge and skills can be added throughout the process.

d. <u>Template Method.</u> The facilitators should look for the opportunity to use a template approach to determining training content. An already existing template may be used by the facilitators and presented for validation by the SMEs, or a template may be constructed by the design team. Contractors subject to DOE O 426.2 should use this method to determine the content of various training programs. DOE O 426.2 requires that "Training in the following facility-specific subject areas shall be included as appropriate to position:" DOE O 426.2 then provides a list (template) of topics   for the facility to analyze for applicability.

The template method provides a simplified process for determining appropriate content or learning objectives associated with, for instance, the operation or maintenance of a specified facility system.

Below is an example of a portion of a template for a job which requires systems knowledge and operation. The system or equipment name can be inserted in the blanks. Note that it was determined that the training content for each system, no matter what the system, involves a knowledge of the purpose of the system and the components of the system. No matter what the system, knowledge of terms and symbols associated with the system should be taught. Operational characteristics and capabilities of the system need to be included as content, etc.

Systems (General Content):

1. State the purpose(s) of the _____ (System).

2. Systems (Physical Description):

3. Describe all major and associated components of the _____.
   Include name, function, quantity required, physical appearance, location, etc.

4. State that the _____ requires the following support systems: Include the function of each.

5. Describe displays, controls and indicators directly associated with the _____.

6. State the operational characteristics and capabilities of the _____
   (i.e., power, logic levels, capacity, emergency, tolerance, and accuracies when applicable).

7. Define the terms and symbols used with the(for example, _____,
   and _____.

8. Describe the differences between _____. [Models]

9. State the security requirements for the _____.

Coming up with or using already constructed templates dramatically cuts down on the amount of time it takes to determine content for a training program. And when the

content is written in the form of learning objectives, like the examples above, it eliminates the performance of this step later. While templates can simplify and speed up the content analysis process, facilitators should recognize that *most* training situations will also require the development of some unique content. Therefore, be careful in assuming that a particular template addresses *all* the knowledge and skills an employee needs to perform a particular task.

e. Incorporating Various Methods. The TTTD situation may require the use of all four methods mentioned above. Combining methods based on observed need is beneficial since the facility may have procedures for some tasks and not for others. Therefore, document analysis processes would be used for the proceduralized tasks and brainstorming for the tasks which have no procedures. There may be some tasks about which the SMEs are knowledgeable, but others that are new and about which they know very little. Brainstorming should be used for tasks in which they have greater knowledge and traditional analysis for the tasks in which they have little knowledge. Often, brainstorming the content followed by brief document analysis is effective.

Simply apply the method that is best based on the determining criteria. Incorporating different methods is good since it ensures that the appropriate content will be determined and it also provides variety to the process, making it seem less tedious to the SMEs.

4.8.6 Step 6 - Identify Additional Content.

4.8.6.1 Set-Up for Step 6. Ensure that the documents needed for this step are in the room. Various sources of information that the team should check include:

a. Regulatory requirements (DOE, OSHA, EPA, etc.)
b. DOE Order 426.2
c. DOE Order 422.1
d. The facility's Safety Analysis Report
e. Occurrence Reporting and Processing System (ORPS) reports
f. Documents describing recent facility events

Ensure that enough copies of the documents are available for all participants to read. The flipchart and markers used in Step 5 will also be needed.

4.8.6.2 Conducting Step 6. Now that all of the content has been identified, remind the team from the "Overview" lesson that they need to ensure that they have not forgotten any content mandated for inclusion in the program by various requirements documents. State that other content could possibly be included in the training program due to recent industry events (accidents or incidents that occurred,

why they occurred, what could have been done to prevent them, lessons learned from industry, etc.).

Using NGT or brainstorming, have the team identify the regulatory requirements and, as possible, industry and facility events that impact the job position being analyzed. Divide the documents among participants and have them examine the documents to identify additional knowledge and skills. As participants find additional content, have them write it on an 8.5 x 11 pages and direct you to place the content in accordance with the following:

> a. If the content is already being taught somewhere in the existing training program structure because it is mandatory, place it on the training program structure (signs and flipchart page drawings created during Step 2 of this process).

> b. If the content is not being taught currently, place it on the most applicable content analysis flipchart page (with the previously-identified content).

Write an appropriate identifying number on the top corner (along with an "R" to indicate it is a regulatory requirement) on separate 11/2X2 Post-it notes for each content area identified during this step. If the regulatory requirement also states the frequency that the content area needs to be taught, add that on the Post-it note.

4.8.7 Step 7 - Identify Applicable Existing Training.

4.8.7.1 <u>Set-Up for Step 7.</u> Set up a flipchart stand with a pad of paper at the front of the room where all participants can see it. The facilitator will need a few different colored felt-tipped markers.

4.8.7.2 <u>Conducting Step 7.</u> **NOTE: Identifying applicable existing training that can be utilized during future development efforts may actually take place sporadically throughout the entire design process. For instance, when the team is deciding on the topics that will be a part of their training structure, a particular course that may teach the information under that topic may be mentioned. When this happens at any time during the process, immediately make a note on a 6X4 Post-it and attach it to the topic. The note should read something like, "Check [course title] for possible training materials."**

Even though identifying possible existing training materials can take place throughout the entire process, it should be conducted as a separate step as well in order to focus the step and ensure that all possibilities have been exhausted.

Therefore, remind participants from the "Overview" lesson that the purpose of analyzing existing training materials is to save time and money, to avoid duplicated efforts in design and development, and to improve the quality of the lessons.

Using NGT or brainstorming, have the participants identify sources where existing training materials might be found. Have the team identify *internal* sources first, including possible material from other training departments at their site including operations and maintenance divisions, supervisors, and engineering and design departments.

List all of the possible materials on a flipchart. Use consensus decision-making to decide which materials would be useful and eliminate those which are not. When the team comes to consensus regarding particular course materials, as stated above, make a note on a 6X4 Post-it and attach it to the topic. The note should read something like, "Check [course title] for possible training materials."

Next, using NGT or brainstorming again, have the participants identify *external* sources where existing training materials might be found including possible material from:

      a.   The DOE Training Coordination and Assistance Program
      b.   Other DOE facilities
      c.   Commercial utilities
      d.   Vendors
      e.   Training Resources Data Exchange (TRADE)
      f.   Vocational education programs
      g.   Technical trade schools

List all of the possible materials on a flipchart. Use consensus decision-making to finalize the list of material. Again, attach a 6X4 Post-it note to the topic identifying the course as a possibility.

Point out that for now, this step must end. However, analyzing the materials that have been identified must continue later. One or two SMEs and an instructional technologist will need to complete the following steps before the existing materials are approved for use:

      a. Gather the training material.

      b. Analyze the training material.
         1. Are the objectives clear?
         2. Are the tests appropriate?
         3. Is the material user-friendly?

    c. Summarize the analysis and make recommendations for how to use the material.

    d. Document the results.

4.8.8   Step 8 - Write the Learning Objectives.

    4.8.8.1<u>Set-Up for Step 8.</u> Directions on how to set-up for Step 8 are included in the "Writing Learning Objectives" lesson plan (Addendum F).

    4.8.8.2   <u>Conducting Step 8.</u> Teach the lesson in Addendum F, "Writing Learning Objectives." This lesson was carefully designed to equip the team members to perform adequately during Step 8 of the TTTD process.

NOTE: The team of SMEs may not be writing the learning objectives. If this is the case, do not teach the team this lesson or continue this step.

After the lesson is taught, write terminal and enabling objectives for the program content. If there is an overwhelming number of topics to write objectives for, split the participants up into smaller teams (if possible). Divide the tasks between the teams. If the participants are split into teams, be aware of the areas of expertise of the SMEs on each team, and divide the tasks between the groups so that certain tasks go to those SMEs that have expertise in that particular area.

NOTE: Record terminal and enabling objectives using the format in Addendum J.

The facilitator(s) should place a flipchart stand (which will serve as a working board) in front of the group of SMEs. The trainer who will be in charge of training development will document, on a piece of paper, the *final* form of the terminal and enabling objectives.

The facilitator(s) should choose a topic and guide the group in coming up with a terminal objective in the same way they were guided in the "Writing Learning Objectives" lesson. The facilitator(s) should then guide the group in determining the enabling objectives for the task and, once they are all listed, place them in the best order. Once the objectives are in finalized form, copies should be given to the appropriate trainers and supervisor(s) of the facility.

4.8.9 <u>Summary.</u>

Once the team's work is finished, thank the members for their cooperation and persistence. Re-emphasize the importance of each member's contribution to the facility's training efforts. The coordinator will send "thank-you" letters and a certificate to

each member of the team soon after the workshop. If you have not already done so, collect the attendance roster.

Remind participants that the design phase is not completed until test items and a training program description have been written.

4.9   Follow-Up Activities.

4.9.1 Review With the Coordinator.

Give the information at the right to the Coordinator to serve as auditable documentation showing how the training program was designed and how tasks were assigned to training.

Explain that the design phase continues after the process by writing a training program description, task-to-training matrix, lesson and curriculum specifications, a development plan, and test items. Each facility may have its own documents that serve these purposes.

4.9.2 Complete any Design Steps.

Occasionally, all eight steps are not completed during the time allotted. The coordinator should make sure that these steps are completed prior to starting development efforts.

> **Give to Coordinator:**
>
> 1. The participant roster.
> 2. All evaluation forms (from participants, observers, and facilitators).
> 3. The stack of duty areas, task statement pages, and the flipcharts containing the content determined for each task.
> 4. The flipchart pages containing the training program flowpath.
> 5. A disk containing all appendices (the training program content, the draft task-to-training matrix, and learning objectives).